WHAT IS CLAIMED IS:

1. A method of automatically loading a desired amount of powder material into a tubular mold having a bore extending therethrough, said method comprising the steps of:

providing said mold with a lower press core fitted in a lower end of said bore;

bringing said mold with said lower press core fitted therein to a powder filling position;

filling an amount of powder material into said mold and strickling off any excessive amount of powder material to the level of a top surface of said mold; and

pressing at a desired pressure the amount of powder material in said mold to form a powder compact.

2. The method according to claim 1, wherein said mold comprises a sintering mold and said lower press core has a top surface, and wherein the method further comprises the steps of:

determining the depth of said top surface of said lower press core from said top surface of said sintering mold;

displacing said powder compact with said lower press core relative to said sintering mold so as to bring said powder compact to a desired position in said sintering mold; and

fitting an upper press core into said bore of said sintering mold above said powder compact.

3. The method according to claim 1, wherein said mold comprises a powder-compact-forming mold and said lower press core has a top surface, and wherein the method further comprises the step of:

determining the depth of said top surface of said lower press core from said top surface of said powder-compact-forming mold; and

displacing said powder compact with said lower press core relative to said powder-compact-forming mold so as to remove said powder compact and said lower press core from said powder-compact-forming mold.

4. The method according to claim 1, further comprising the

steps of:

repeating said filling/strickling step a number of times so as to form in said mold a multi-layered powder compact comprising layers of different powder materials, which differ from one another in at least one of properties including component(s) of powder material, percentages of components, particle size and particle shape; and

repeating said pressing step subsequent to every repetition of said filling/strickling step.

5. The method according to claim 1, further comprising the steps of:

repeating said filling/strickling step a number of times so as to form in said mold a multi-layered powder compact comprising layers of different powder materials, which differ from one another in at least one of properties including component(s) of powder material, percentages of components, particle size and particle shape; and

repeating said pressing step subsequent to every two or more repetitions of said filling/strickling step.

6. The method according to claim 4, wherein said different powder materials are stored in individual hoppers, wherein said powder filling position is defined at a single position common to all of said hoppers, and wherein said method further comprises the step of:

bringing said hoppers sequentially to said single powder filling position.

7. The method according to claim 5, wherein said different powder materials are stored in individual hoppers, wherein said powder filling position is defined at a single position common to all of said hoppers, and wherein said method further comprises the step of:

bringing said hoppers sequentially to said single powder filling position.

8. The method according to claim 4, wherein said different powder materials are stored in individual hoppers, wherein said powder filling position is defined at a number of positions one for each of said hoppers, and wherein said method further comprises the step of:

bringing said mold sequentially to said number of powder filling positions in the order appropriate for forming said plurality of layers in said mold.

9. The method according to claim 5, wherein said different powder materials are stored in individual hoppers, wherein said powder filling position is defined at a number of positions one for each of said hoppers, and wherein said method further comprises the step of:

bringing said mold sequentially to said number of powder filling positions in the order appropriate for forming said plurality of layers in said mold.

10. The method according to claim 1, further comprising the step of:

measuring the weight of the amount of powder material filled into said mold after said filling/strickling step is performed.

11. An apparatus for automatically loading a desired amount of powder material into a tubular mold having a bore extending therethrough, said apparatus comprising:

a mold conveyor system for supporting and conveying said mold with a lower press core fitted in said bore;

a powder filling mechanism for filling an amount of powder material into said mold, said powder filling mechanism being located at a powder filling position defined along a transportation path of said mold conveyed by said mold conveyor system; and

a press unit for pressing at a desired pressure the amount of powder material in said mold to form a powder compact.

12. An apparatus for automatically loading a desired amount of powder material into a mold according to claim 11, wherein:

a) said mold conveyor system comprises:

a guide rail extending to cover a predetermined range; and

a carrier movable along said guide rail and capable of supporting for vertical displacement said mold with said lower press core fitted in said bore;

b) said powder filling mechanism comprises:

a hopper located above a transportation path of said carrier and adapted to store an amount of powder material therein; and

a strickle mechanism for strickling off any excessive amount of powder material, being filled into said mold from said hopper, to the level of a top surface of said mold; and

c) said press unit comprises:

a lower plunger for pressing upward said lower press core fitted in said mold; and

an upper plunger for pressing downward the amount of powder material in said mold.

13. An apparatus for automatically loading a desired amount of powder material into a mold according to claim 12, wherein:

a plurality of said powder filling mechanisms are provided, in which different powder materials are stored, respectively, differing from one another in at least one of properties including component(s) of powder material, percentages of components, particle size and particle shape, wherein said plurality of powder filling mechanisms are arranged in line along said transportation path of said carrier.

14. An apparatus for automatically loading a desired amount of powder material into a mold according to claim 12, wherein:

said hopper is movable relative to said mold as held at said powder filling position and movable on a plane of said top surface of said mold as held at said powder filling position; and

said hopper forms a part of said strickle mechanism.

15. An apparatus for automatically loading a desired amount of powder material into a mold according to claim 12, wherein:

said carrier comprises:

a movable base;

a receiving plate for supporting said mold, said

receiving plate being supported by said movable base for vertical displacement relative to said movable base;

a push-up member for displacing said lower press core fitted in said bore of said mold when said mold is supported by said receiving plate, said push-up member being supported by said receiving plate for vertical displacement relative to said receiving plate; and

a drive unit for driving said push-up member to make displacement.

16. An apparatus for automatically loading a desired amount of powder material into a mold according to claim 11, further comprising:

a measure unit for measuring the weight of said sintering mold with the amount of powder material filled into said mold, so as to measure the weight of the amount of powder material filled into said mold.

17. An apparatus for automatically loading a desired amount of powder material into a mold according to claim 11, wherein said powder filling mechanism has a single powder filling position, and wherein:

a) said powder filling mechanism comprises:

at least one hopper movable to and from said single powder filling position and adapted to store an amount of powder material therein; and

a strickle mechanism for strickling off any excessive amount of powder material, being filled into said mold from said hopper, to the level of said top surface of said mold; and

b) said press unit comprises:

a lower press member located at said powder filling position, for pressing upward said lower press core fitted in said mold; and

an upper press member for pressing downward the amount of powder material in said mold.

18. An apparatus for automatically loading a desired amount of powder material into a mold according to claim 17,

wherein:

said mold conveyor system comprises:

a guide rail;

a movable base guided by said guide rail for movement along said guide rail and having a number of holes formed therein and arranged in line, each of said holes being adapted to be aligned with said bore of said mold;

a stop member attached to said movable base, for limiting upward displacement of said mold; and

a drive unit for driving said movable base to move along said guide rail in both directions, whereby said movable base is capable of carrying the same number of said mold as that of said holes at one time.

19. An apparatus for automatically loading a desired amount of powder material into a mold according to claim 17, wherein:

said powder filling mechanism further comprises a rotary table capable of indexing movement;

said hopper is movable relative to said mold held at said powder filling position and movable on a plane of said top surface of said mold held at said powder filling position;

said hopper forms a part of said strickle mechanism;

said at least one hopper comprises a plurality of hoppers provided on said rotary table at circumferentially spaced positions with respect to the axis of said rotary table, said plurality of hoppers being capable of individual movement; and

different powder materials are stored in said plurality of hoppers, respectively, differing from one another in at least one of properties including component(s) of powder material, percentages of components, particle size and particle shape.

20. A powder filling mechanism for filling powder material into a mold which has a bore opening at a top end thereof, said mechanism comprising:

a support plate having a top surface and a hole for

receiving said upper end of said mold, wherein said upper end of said mold may be fitted in said hole without any substantial clearance therebetween and with said top surface of said support plate and a top surface of said mold being substantially flush with each other;

a hopper having a bottom surface and so disposed as to be movable on said top surface of said support plate with said bottom surface being in contact with said top surface of said support plate, said hopper having an amount of powder material stored therein; and

said hopper having a bottom opening for dispensing powder material, which opens at said bottom surface and has a size equal to or greater than that of a top opening of said bore of said mold, wherein said hopper is movable on said top surface of said support plate and across said top surface of said mold.

21. A powder filling mechanism according to claim 20, wherein:

said hopper is movable between a first position at which said bottom opening of said hopper is closed by said support plate and a second position at which said bottom opening of said hopper is in alignment with said hole in said support plate, whereby powder filling is completed by a pair of strokes of said hopper from said first position to said second position and then back to said first position.

22. A powder filling mechanism according to claim 20, wherein:

said hopper is movable along a straight path between first and third positions at which said bottom opening of said hopper is closed by said support plate, wherein said hopper passes by a second position during a stroke between said first and third positions, at which said bottom opening of said hopper is in alignment with said hole in said support plate, whereby powder filling is completed by a single stroke of said hopper from one of said first and third positions to the other.